3.5 DMC, A TOOL FOR DEVELOPING NEW FORMS OF FAMILY-BASED AGRICULTURE IN CAMBODIA

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Abstract

In Cambodia, the traditional family farming system is based on rainfed lowland rice cropping. This type of cultivation intersects two main agro-ecosystems concentrated around the "Mekong-Tonle Sap system" in the central region of the country: (1) strict rainfed areas on upper and sandy terraces and (2) lower hydromorphic plains reached by river floods, during the second half of the rice cycle. In a simplified manner, those production systems alternate between photosensitive rice crops during the rainy season and a common grazing period during the dry season and the early rainy season.
Roughly 2.5 million families share less than 2.3 million hectares of these production systems with low land productivity and low labour output, mainly designed and driven by climate risk management (no water control). This overall land limitation, combined with traditional practices based on an extensive management of labour (in connection with risk control) leads to general underemployment on farms and drives families to look for additional incomes from off-farm activities. Due to a lack of job opportunities in the countryside, this "quest" results in major migration flows: in some cases, some family members move "seasonally" (parent) or definitively (children) to cities or even abroad, in the subregion; in other cases, the whole family (younger household) moves to search for land in peripheral and less populated parts of the country (northern regions, eastern highlands, etc.). This second type of migration contributes to increase the pressure exerted on natural resources, with the new migrants, after reclaiming forested areas, implementing upland cropping systems geared towards subsistence (upland rice) and/or cash (maize, cassava, etc.) with additional income derived from logging, charcoal production, poaching, etc.. For those poor migrants, the lack of access to land rights and sustainable cropping practices in these new types of agro-ecosystems largely prevent the development of fixed, profitable and environment-friendly production systems.
These "pioneer flows" could be considered as a resumption of pre-war farmer movements which led to the "reconquest" of the western regions (mainly on the hydromorphic plains of Battambang, Siem Reap, etc.), the reclamation of the Kampong Cham plateaux (for both trees and annual cash crops) and the expansion of a colonization fringe around the Tonle Sap populated regions (upper sandy terraces).

In the far west of the country (Pailin and western districts of Battambang), this general land access pattern for medium and poor farmers has been modified by recent history. This region was one of the last Khmer Rouge strongholds and the "surrender" negotiations with the Royal Government of Cambodia in the late 1990s included a land deal for former KR soldiers' families.

Initially (1996-98), each family involved received around 5 ha of hilly land, mainly on previously logged and often mined forest areas. Quickly, after an early phase of small-scale subsistence farming, probably a continuation of wartime practices, commercial farming driven by

Thai market demand arose in the early 2000s. Initial natural capital (linked to neighbouring natural resources), good soils and high fertility inherited from reclaimed forest, simple cropping systems -2 cycles per year- eased by credit and contract labour offers for ploughing and conventional sowing proposed by Thai traders, triggered fast and massive deforestation. That movement reached a peak between 2002 and 2005 and gave rise to more than 100,000 ha of cropped uplands in the "far western" region.

The first cropping systems developed were based on soybean production (2000 – 2005) and then shifted to maize growing (2004 – 2008); today, massive conversions to cassava (demand from the ethanol and animal feed sectors) are observed. These successive mutations were carried out in accordance with Thai market demand, but also correspond to gradual soil degradation; the mineralization of soil organic matter, erosion, soil compaction, increasing weed pressure, etc., induced by 2 disc-ploughings per year, limited crop yields and increased production costs (weed control) year after year. Gradual soil degradation and a reduction in crop performance are currently balanced by the recent rise in agricultural prices, but will greatly worsen with the conversion to plough-based cassava monocropping.

Although threatened by disastrous agricultural practices, relying on «mining» exploitation of soil resources, this "western episode" must be considered as a demonstration of the dynamism and flexibility of family-based agriculture, once it has access to the necessary production factors to respond to various market demands.

Besides its 3.5 million ha of protected areas, Cambodia has several million hectares of land reserves with an agricultural potential (5 to 7 million ha?). Taking inspiration from the western experience, part of this huge national asset could be gradually allocated for smallholder agricultural development.

This agrarian policy may be an appropriate way to (1) alleviate poverty and rural underemployment, (2) achieve more balanced economic development between the booming larger cities and the countryside and (3) enable the growth of an agro-industrial sector connected to national and regional demand, a new outlet for local and international investors.

This new agricultural development, involving small and medium-sized farms should primarily be based on annual crops, due to their lower implementation costs, the absence of an immature period, the high flexibility and diversity of the cropping systems created by mixing grain, tuber and livestock production.

Such an orientation of agriculture can and must be based on the extensive promotion of DMC systems, the only available technologies enabling sustainable management of soil resources in strict upland situations. Large-scale extension could be enhanced through the support of DMC-based labour contractors for direct sowing, herbicide applications etc., in close association with the downstream agro-industrial sector and larger farmers.